United States
Environmental Protection
Agency

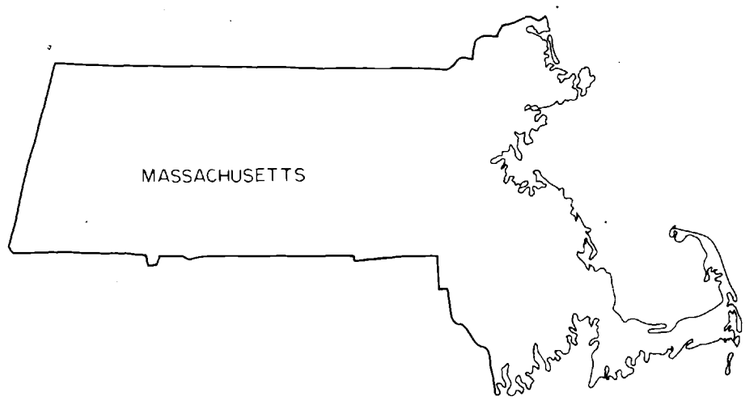
Environmental Monitoring
Systems Laboratory
P.O. Box 15027
Las Vegas NV 89114

TS-PIC-2006
May 1982

Research and Development

Historical Assessment of Cornell-Dubilier-PCB-Related Facility New Bedford, Massachusetts

prepared for
EPA Region 1
and OERR



Lopes Dep #13
3/4/86 PLW

New Bedford Harbor

Admin Rcd.

MD1
17.4

CONTENTS

FIGURES

INTRODUCTION

Cornell-Dubilier is a company in New Bedford, Massachusetts that has been engaged in the manufacture of electrical capacitors, a process that for many years involved the use of polychlorinated biphenyls (PCBs).

EPA Region 1 Enforcement Division has discovered significant PCB contamination in several water bodies near the New Bedford area, in particular, the upper and lower New Bedford Harbor, Clark's Cove and Buzzard's Bay. The PCBs may have migrated from disposal areas at the plant site, been introduced at various municipal sewer system overflow outfalls, and/or been improperly treated and then released from the New Bedford Sewage Treatment Plant.

The production of PCBs has been banned completely in the U.S. since 1979; therefore, a large portion of the contamination of the waters due to manufacturing operations around New Bedford probably occurred prior to 1979. EPA Region I also reports that ambient air monitoring downwind from Cornell-Dubilier showed elevated levels of PCB's.*

Enforcement officials in EPA Region 1 requested that the Environmental Photographic Interpretation Center (EPIC) perform a historical study of Cornell-Dubilier as part of their continuing effort to assess PCB contamination in the New Bedford area.

---

*Memo from EPA Region 1 Enforcement Division, dated July 17, 1981. The date of the air sampling is not given in the memo.

This report uses four different sources of historical information about Cornell-Dubilier and its surroundings: aerial photographs, U.S.G.S. topographic maps, Sanborn Map Company Fire Insurance Maps and maps of the New Bedford municipal sewer system.*

Aerial Photographs

Historic aerial photographs of Cornell-Dubilier were available for the years 1938, 1951, 1962, 1966 and 1974. While only one print is shown in this report for each year, pairs of photographs were available to the analyst (except for 1938), allowing stereoscopic (3-D) viewing of the site. This is a tremendous aid in interpretation because the apparent height and depth of objects provided by 3-D viewing renders the scene much more familiar and understandable.

The value of aerial imagery to a historical study of this kind cannot be overestimated. More than any map, written record or personal memory, a photograph stands as a completely accurate record of what was found at a site at a given time in the past. The usefulness of this record is limited only by the clarity of the photograph and the ability of the analyst to label what he or she sees on the photograph correctly.

Because the analyst is sometimes unsure of what he or she sees on the photograph, the terms possible and probable are used to indicate the degree of certainty that the analyst feels about a given label.

Because photographs are such an accurate record of conditions at a given time, descriptions of the site taken from the aerial photographs will be written in present tense, as though the analyst were actually viewing the site on that day in the past.

U.S.G.S. Topographic Maps

The U.S.G.S. 7 1/2-minute topographic map of New Bedford South, Massachusetts was used extensively by the analyst in preparing this report, and it serves as the base for the Location Diagram on page 4.

Sanborn Map Company Fire Insurance Maps

During the past century, Sanborn Map Company has published maps and atlases of more than 12,000 U.S. towns and cities. These are large-scale, highly detailed maps of commercial, industrial and residential buildings. They were designed to provide accurate, current and detailed information to fire insurance companies about the buildings they were insuring.

Three of these maps, acquired from the Library of Congress, are used in this report. They provide an accurate description of the layout of the building in question and help to establish the ownership or control of the building at various times in the past.

Although Sanborn maps were revised periodically, the exact dates of the revisions are not known. This report contains three maps: one dated 1924, a second revised sometime between 1924 and 1950 and a third revised between 1950 and 1975.

New Bedford Municipal Sewer System Map

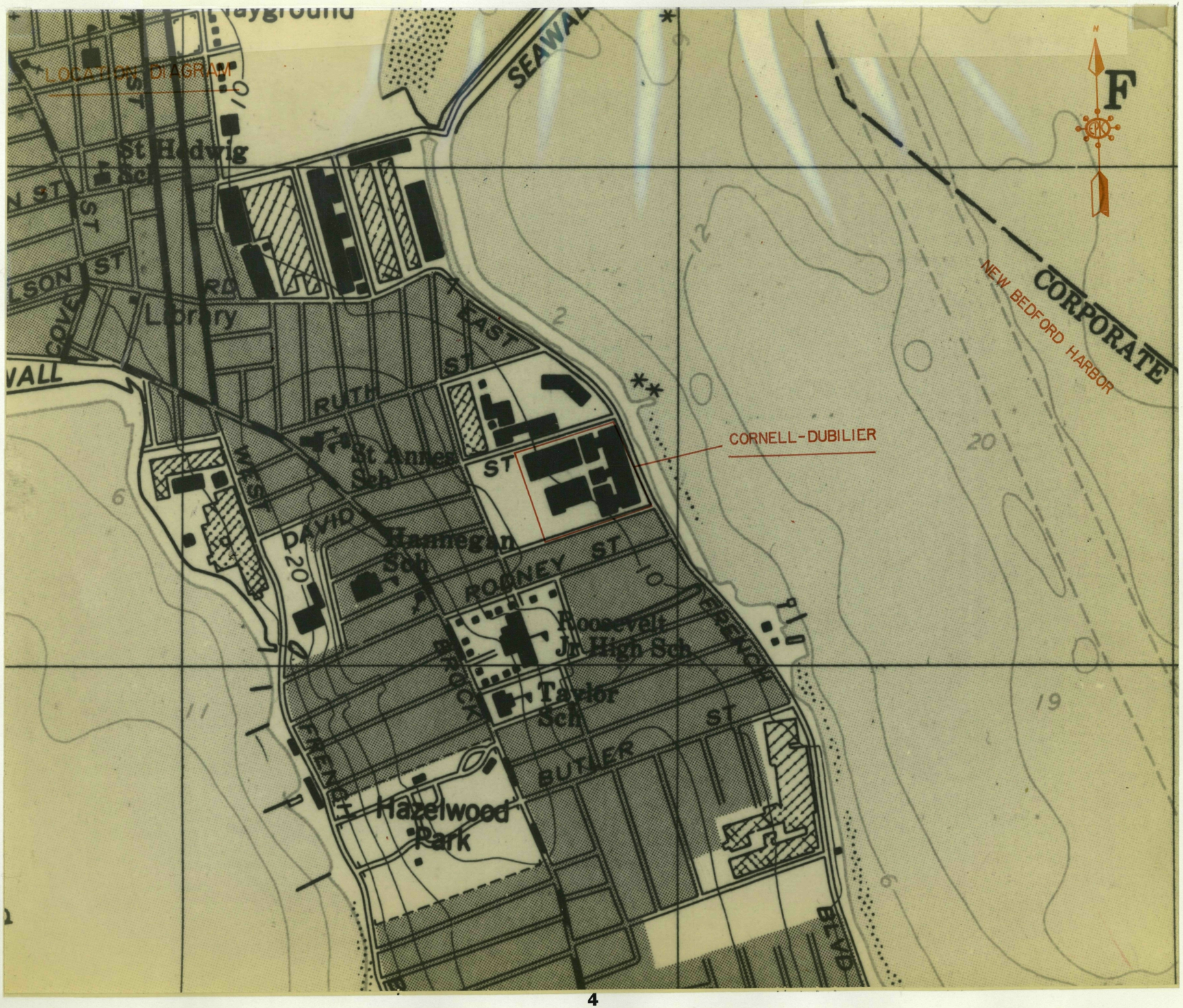
This map was provided by the new Bedford City Engineer's Office, and it represents part of the municipal sewer system, after 1971.

*For a detailed description of the original film and maps used, see the Reference section at the end of this report.

GENERAL SITE DESCRIPTION

Cornell-Dubilier is located south of the seawall, on the west side of New Bedford Harbor in New Bedford, Massachusetts.

North of the plant is David Street and beyond it is an industrial area. To the west is a vacant lot. Mott Street borders the south side of the plant, and a residential area lies south of the street. East French Boulevard (previously Rodney-French Boulevard), a hurricane barrier, and New Bedford Harbor lie to the east of the plant.


LOCATION DIAGRAM
Playground
SEAWALL
St Hedwig Sch
N ST
ST
LSON ST
COVE
RA
Liberty
WALL
EAST ST
RUTH
St Annes Sch
ST
DAVID
Hammaran Sch
ROONEY ST
Roosevelt Jr High Sch
Taylor Sch
BUTLER ST
Hazelwood Park
BLVD
CORNELL-DUBILIER
CORPORATE
NEW BEDFORD HARBOR
F
N
2
6
10
12
20
19

SUMMARY OF ACTIVITY

Drums and Refuse

Numerous areas of piled refuse, including possible drums and capacitors, are visible on the site from 1951 to 1974 (see photos - pp. 13, 15, 17, 19).

Mounded Material and Waste Burial

An area of possible waste burial can be seen on the 1951 photo (p. 13).

Drainage

For many years, runoff from the back lot of the plant flowed into a pool on the vacant lot west of the site (see photos - pp. 11 and 15). A basketball court was eventually built on this vacant lot (see photo - p. 19).

Standing Liquid and Ground Staining

Numerous pools of liquid are visible at the site on most of the photos. These pools could be standing rainwater and/or liquids released from the plant.

Dark areas of probable ground staining are also common. Some of these on the more recent photos correspond with the locations of pools of liquid seen on earlier photos.

Subsurface Pipelines

A drainage channel that flows into New Bedford Harbor is cut into the hurricane barrier east of the plant. It appears to be the terminus of a subsurface pipeline and is visible from 1951 through 1974. In some years, a plume of discoloration can be seen in the water offshore from this channel (see photos - pp. 15 and 17).

Smokestacks

A smokestack is visible on all the years of photography.

SANBORN MAPS 1924-1975

Three Sanborn maps of Cornell-Dubilier were acquired from the Library of Congress.

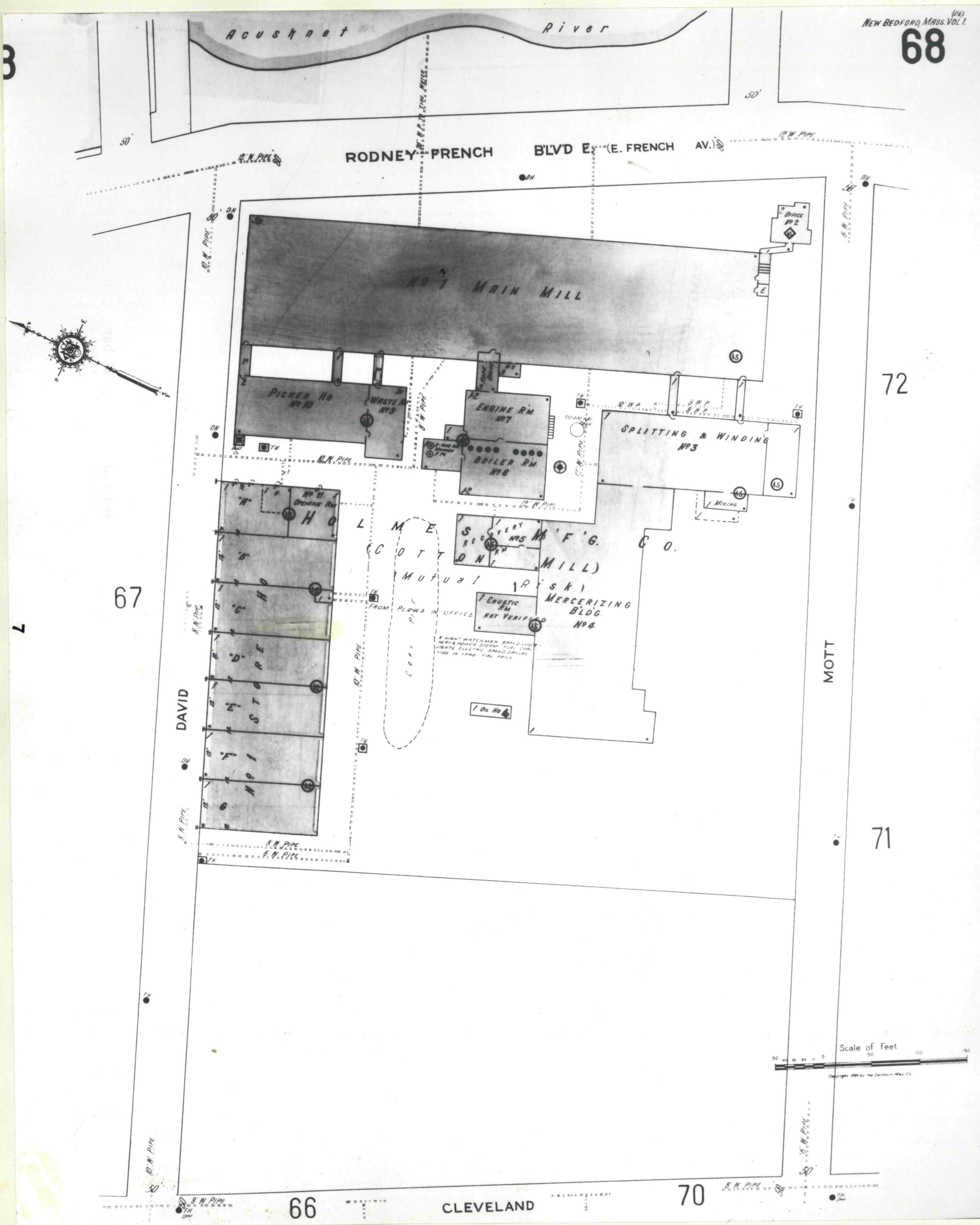
The first map* (p. 7) shows the site as it was in 1924. At this time, the buildings are owned by Holmes Manufacturing Company and house a cotton milling operation.

The second map (p. 8) was revised sometime between 1924 and 1950. It shows Cornell-Dubilier in control of the buildings. A 1944 Sanborn index accompanying the map at the Library of Congress lists Cornell-Dubilier among the industries of New Bedford; a 1939 index does not. It is not certain at what point in time between 1924 and 1939 the information in the 1939 index was compiled. A photograph taken of the site in 1938 is included in this report, but the Sanborn maps and indices do not establish whether or not Cornell-Dubilier was in control of the buildings at that time. However, by the date of the next available photo, 1951, the 1944 index and the 1950 map confirm Cornell-Dubilier as being in control of the buildings.

The third map (p. 9) was revised between 1950 and 1975 and shows that Cornell-Dubilier continues to occupy the buildings through 1975.

---

*Please note that photoduplication of the maps has rendered the original bar scale printed on the maps inaccurate. The scale of the maps used in this report is approximately 1:700.


Acushnet River
RODNEY FRENCH B'LV'D E. (E. FRENCH AV.)
MOTT
DAVID
CLEVELAND
72
71
70
67
66
No 1 Main Mill
Picker Ho No 10
Waste Ho No 9
Engine R'm No 7
Boiler R'm No 6
Splitting & Winding No 3
Office No 2
Mixing
Recovery No 5
Caustic R'm Not Verified
Mercerizing B'ld'g No 4
No 11 Opening R'm
No 1 Store Ho
HOLMES M'F'G. CO.
(COTTON MILL)
(Mutual Risk)
From Plans in Office
Coal Pile
1 Oil Ho
12 W. Pipe
10 W. Pipe
8 W. Pipe
6 W. Pipe
Scale of Feet
Copyright 1924 by the Sanborn Map Co.

1924-1950

MASS. (68) NEW BEDFORD, MASS VOL. 1

68

Acushnet River

RODNEY FRENCH BLV'D (E.) - (E. FRENCH AV.)

No 1
CORNELL-DUBILIER ELEC. CORP'N
NEW BEDFORD DIV'N
F.I.A. R.M.A. POWER ELEC. ADMITTANCE REFUSED - DATA FROM PLANS IN OFF. WATCHMAN, PHYS. CLERK

OFFICE No 2
No 10
No 9
ENGINE RM No 7
BOILER RM. No 6
No 3
MIXING
No 5
No 4
No 11
"A" STORE
"B" STORE
"C" STORE
"D" STORE
"E" STORE
"F" STORE
No 1
No 2
AUTO PARKING

DAVID

MOTT

CLEVELAND

67

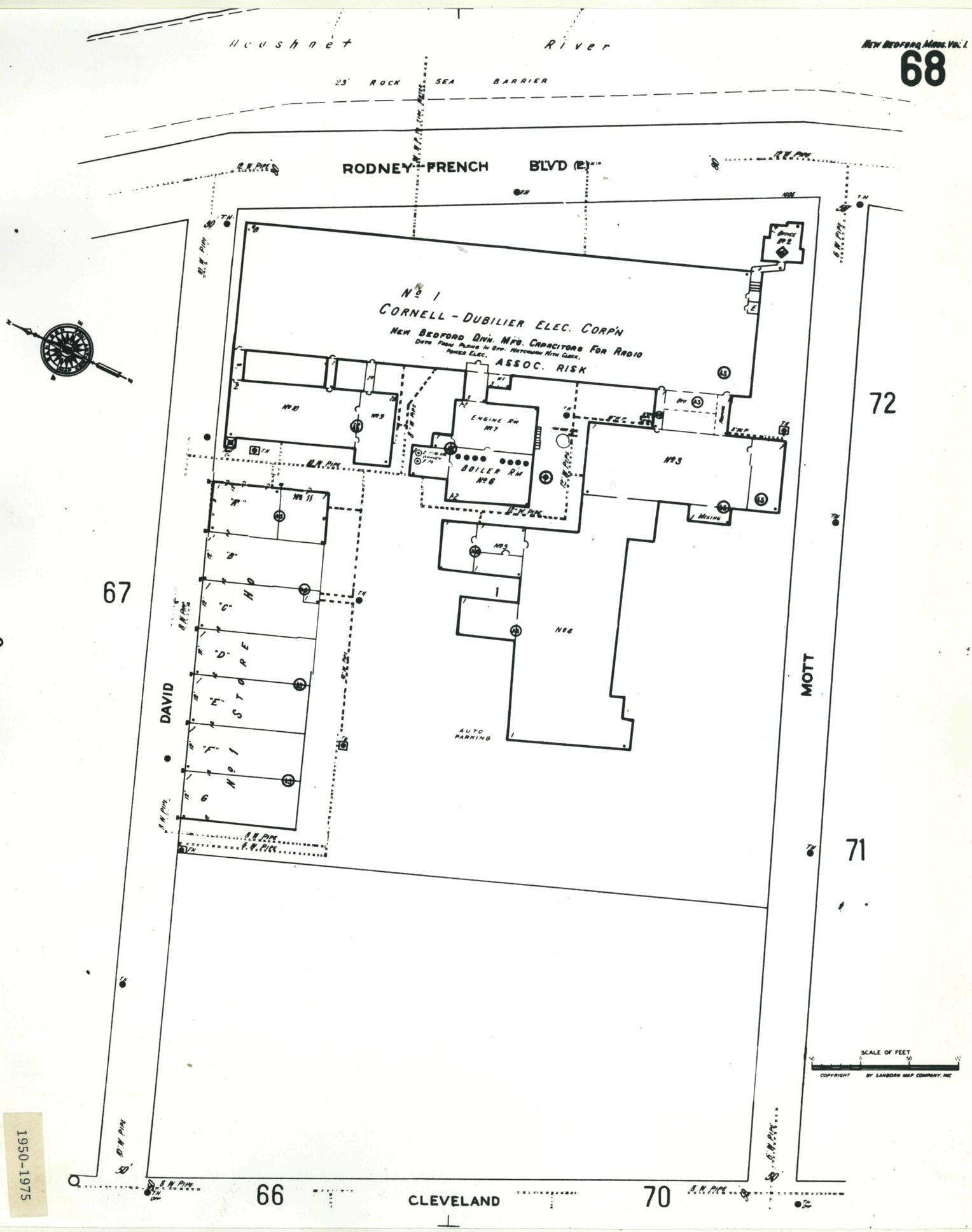
72

71

66

70

Scale of Feet
50 40 30 20 10 0 50 100 150


Acushnet River
23' ROCK SEA BARRIER
RODNEY FRENCH BLVD (E)
No 1
CORNELL-DUBILIER ELEC. CORP'N
NEW BEDFORD DIV'N. MFG. CAPACITORS FOR RADIO
ASSOC. RISK
No 10
No 9
ENGINE RM No 7
BOILER RM No 6
No 3
No 11
No 5
No 4
AUTO PARKING
DAVID
MOTT
67
72
71
66
70
CLEVELAND
SCALE OF FEET
COPYRIGHT BY SANBORN MAP COMPANY, INC

6

1950-1975

CORNELL-DUBILIER DECEMBER 13, 1938 APPROX. SCALE 1: 3,800

ANALYSIS OF PHOTOGRAPH TAKEN DECEMBER 13, 1938

The 1938 photo is black and white and of relatively poor resolution. Since there is only one photo of the site available, no stereoscopic viewing is possible. A fiducial mark also appears on the right-hand side of the photo.

In 1938, the buildings later known to be owned by Cornell-Dubilier were probably still owned by Holmes Manufacturing Company, and were probably being used as a cotton mill (see discussion of Sanborn Maps, p. 7).

Drums and Refuse

No areas on the 1938 photo contain visible drums or refuse.

Area A_1 appears to be a flat, graveled area, perhaps used as a driveway.

Area A_2 is probably a pile of coal.

Both Areas A_1 and A_2 remain basically unchanged through 1966.

Mounded Material and Waste Burial

No signs of mounded, fine-textured material or waste burial are present on the 1938 photo.

Drainage

The U.S.G.S. 7 1/2-minute topographic map of the area shows the general slope of the land around the site to be from southwest to northeast, towards the harbor.

One erosion channel does appear on the site, running under the fence from the west edge of the lot to P_1.

Standing Liquid and Ground Staining

Areas P_1 and P_2 are probable pools of standing liquid.

P_3 is possibly a pool or small man-made lagoon.

The northern portion of the fenced lot appears much darker than other areas of exposed dirt in the photo. This is probably caused by scattered coal from Area A_2.

Subsurface Pipelines

The locations of some of the underground pipelines on the site are shown on the Sanborn maps (pp. 7-9) and on the Municipal Sewer System Map (p. 21).

Fencing

In 1938, a fence completely encloses the site on the south and west. The site is observed to be fenced on all subsequent photographs.

Smokestacks and Incinerators

One smokestack is visible on all the years of photography.

CORNELL-DUBILIER SEPTEMBER 28, 1951 APPROX. SCALE 1: 2,000

ANALYSIS OF PHOTOGRAPH TAKEN SEPTEMBER 28, 1951

Thirteen years later, in 1951, the configuration of the buildings at the site has been changed only by the addition of one small building on the west side of the site (B on the photo).

However, the lot appears much rougher in texture and more mottled in tone. Many areas of probable drums and/or capacitors, refuse and disturbed ground are now present. A well-defined network of dirt roads and paths crisscrosses the entire lot.

The quality of the 1951 black and white photos is very good, and stereoscopic viewing was possible, increasing the accuracy of interpretation.

The Sanborn map on page 8 confirms that Cornell-Dubilier owns the site by the date of this photo.

Tanks

Some possible tanks are visible on the south-central edge of the site.

Drums and Refuse

Photo Areas A_3, A_4, A_6, A_7, A_{10}, A_{11}, and A_{12} contain refuse which possibly includes drums and/or capacitors.

This is the only year that anything of significance appears in Areas A_4, A_{11} or A_{12}.

Mounded Material and Waste Burial

Area A_8 is a possible waste burial area. This is the only year of significant activity in this area.

The rough ground surface and mottled tone of Areas A_4 and A_9 probably indicate waste disposal in these areas. Area A_9 contains over 30 large, deciduous trees in 1951.

Areas A_2 and A_5 contain dark piles of material, probably coal.

Drainage

The channel from the lot to P_1 is not visible on the 1951 photo south of A_4.

No obvious drainage channels are visible on the site.

Standing Liquid and Ground Staining

P_1 is now dry, but still visible.

P_2 is not visible in 1951 and is located under a probable pile of coal (Photo Area A_5).

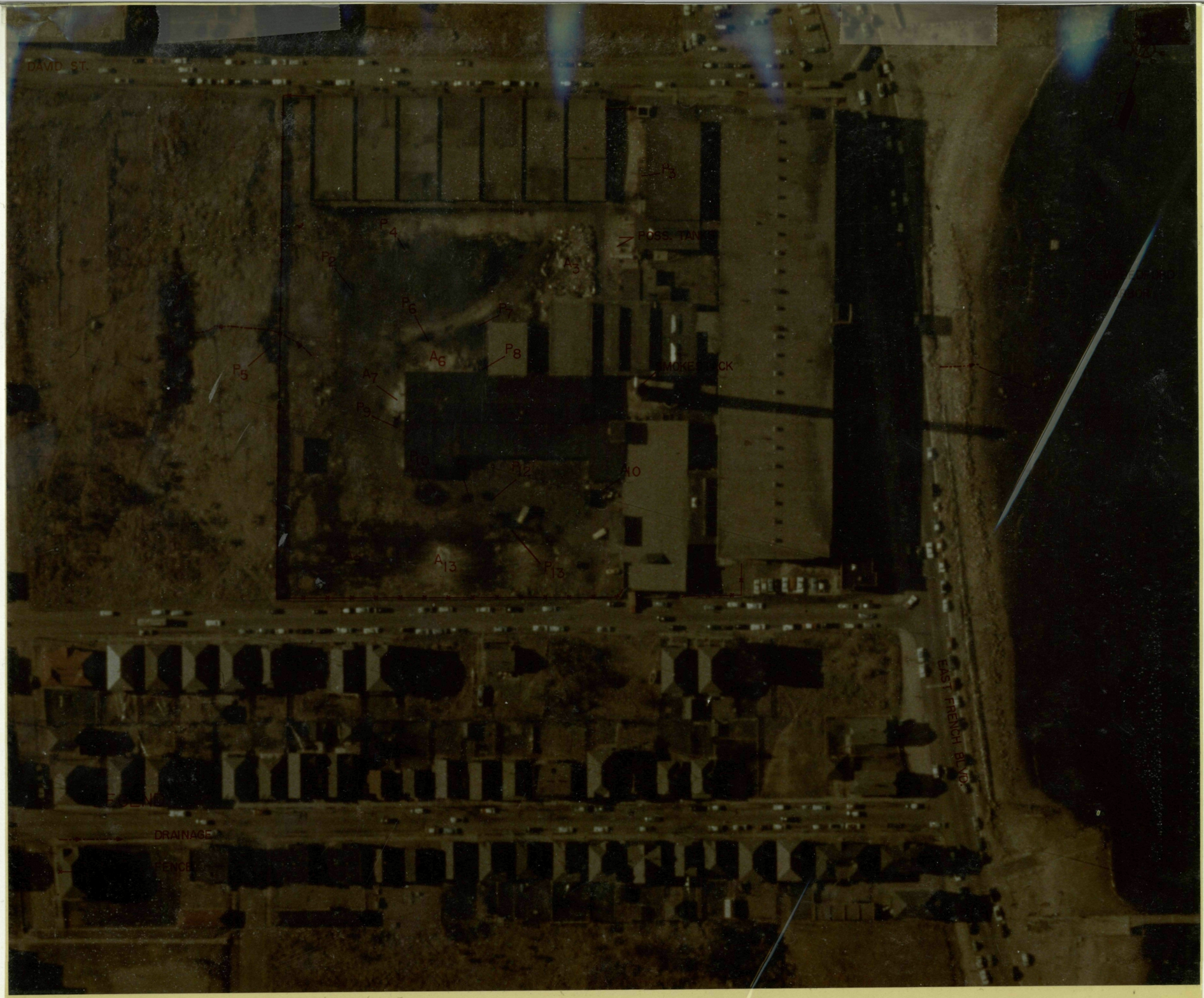
P_3 is still visible.

No new pools of liquid appear in 1951.

One area of probable ground staining is labeled on the photo.

Subsurface Pipeline

A drainage channel cuts into the hurricane barrier at Photo Area E. It appears to be the discharge point of a subsurface pipeline.



CORNELL-DUBILIER APRIL 10, 1962 APPROX. SCALE 1: 800

ANALYSIS OF PHOTOGRAPH TAKEN APRIL 10, 1962

The 1962 color photos of Cornell-Dubilier are excellent in quality, and stereoscopic viewing of the site was possible.

While the brownish tone of this photo somewhat distorts the actual color of objects on the ground, it still provides a better representation than does a black and white photo.

The small green dots visible in some portions of the photo are caused by the developing process and do not represent objects on the ground.

Tanks

A group of possible closed, unrevetted tanks are located in the northeast corner of the fenced yard.

Drums and Refuse

The mound of refuse at Area A_3 is much larger than it appeared in 1962.

Area A_6 still contains a small amount of refuse and light-toned, mounded material.

Area A_7 no longer contains large pieces of refuse, but it does contain fine-textured, light-toned material.

Area A_{10} now shows only a few bits of possible refuse.

Mounded Material and Waste Burial

Area A_{13} is a new area of light-toned mounded material.

There are no obvious signs of waste burial or filling.

Drainage

The drainage channel from the fenced yard to P_1, visible in 1938, is visible again in 1962. It runs from the yard to P_5 and then to P_1. This is the last year of photo coverage on which this channel is visible.

Standing Liquid and Ground Staining

Many pools of standing liquid are visible.

P_1, dry in 1951, again contains liquid.

P_2, buried under a pile of coal in 1951 (Area A_5), now reappears as a small pool.

P_3 now appears as a darkened, dry area. This is the last year that it is visible.

Pools P_4 through P_{13} are all new since 1951.

Much of the surface of Area A_9 appears to be stained. All the trees visible in this area in 1951 are now gone. This is the last year that significant activity is noted in this area.

Subsurface Pipelines

A channel still appears to be cut into the hurricane barrier at Area E. An area of light-toned discoloration appears in the water immediately offshore from this channel.

CORNELL-DUBILIER SEPTEMBER 17, 1966 APPROX. SCALE 1:1,500

ANALYSIS OF PHOTOGRAPH TAKEN SEPTEMBER 17, 1966

The quality of the 1966 color photos of Cornell-Dubilier is very good. As in the 1962 photo, there is a brown tint to this photo, but this does not affect its validity or usefulness in assessing activity at the site. Stereoscopic viewing was possible with the 1966 photos.

Drums and Refuse

Area A_3 shows only a small amount of probable refuse. This is in sharp contrast to the large mound of refuse visible in 1962.

Area A_6 shows a small amount of probable refuse. This is the last year that this area shows any significant activity.

Area A_{10} appears relatively free of refuse.

Mounded Material and Waste Burial

Area A_5 now shows a small, light-toned mound. In 1962, the area was occupied by a pool of liquid (see Area P_2 on the 1962 photo), and in 1951 the area was covered with a large mound of dark material, probably coal.

Areas A_7 and A_{13} still exhibit light-toned, mounded material.

Drainage

Two small drainage channels run into P_{14}.

Standing Liquid and Ground Staining

P_4 and a new pool, P_{14}, are visible on the 1966 photo.

All traces of P_1, P_5 and P_7 are gone.

Many ground stains are now visible at the site, including stains at the locations of P_6 and P_8 through P_{13} (from the 1962 photo).

Subsurface Pipelines

A cut in the shore and a discolored plume in the water are visible at Area E.

CORNELL-DUBILIER FEBRUARY 27, 1974 APPROX. SCALE 1" = 100'

ANALYSIS OF PHOTOGRAPH TAKEN FEBRUARY 27, 1974

The photo coverage of Cornell-Dubilier in 1974 is black and white and of good quality. Although stereoscopic viewing of the site was possible, the smaller scale of the original film* prevents the detailed analysis that was possible with the 1962 and 1966 photos.

Drums and Refuse

Area A_1 now appears to contain a large number of possible drums and/or capacitors, as well as other possible refuse. These replace the probable light-toned gravel driveway that was visible from 1938 to 1966. There is a possible trench in this area.

Area A_3 no longer shows a pile of refuse, but a possible structure is visible.

Area A_{10} shows an increased amount of mounded material and probable refuse.

Mounded Material and Waste Burial

There are no obvious signs of either mounded material or waste burial and/or filling.

The probable pile of coal present at Area A_2 from 1938 to 1966 is no longer present.

*See the Reference Section

Drainage

A channel now runs along the west side of the site. The direction of possible flow cannot be determined.

Standing Liquid and Ground Staining

None of the pools of liquid visible on earlier photos are now visible.

A basketball court (Area C) has been built outside the fence in the approximate former location of P_1. (P_1 is visible on the 1938, 1951 and 1962 photos.)

Subsurface Pipelines

A small discolored area appears in the water at Area E. There is some evidence of active discharge at Area E in all the photos from 1951 to 1974. In the 1938 coverage, this area is obscured by the fiducial mark of the camera.

Buildings

The small building (Area B) that appeared on the 1951 photo is no longer present. A light-toned area remains where the building stood.

MUNICIPAL SEWER SYSTEM

This map shows a direct connection between Cornell-Dubilier and the New Bedford Municipal Sewage Treatment Plant.

The thin lines leading out into Clark's Cove and Buzzards' Bay indicate combined sewer system/storm sewer overflow outfalls. When the maximum capacity of the system is reached, untreated wastewater may be released at these points.

CLARK'S COVE

SCREEN HOUSE
(NOT OPERATIONAL)

FORT RODMAN

SEWERAGE TREATMENT PLANT

CORNELL-DUBILIER

NEW BEDFORD HARBOR

LEGEND

- MAIN INTERCEPTOR
- COMBINED SEWER
- SEPARATE SANITARY SEWER
- FORCE MAIN
- WASTEWATER DIVISION PUMP STATION

N

SEWER SYSTEM MAP

Aerial Photography

Date	Source	Approximate Original Scale	EPIC Frame Numbers
December 13, 1938	National Archives and Records Service	1:28,800	112
September 28, 1951	National Oceanographic Survey	1:10,000	3074
April 10, 1962	National Oceanographic Survey	1:15,000	3063
September 17, 1966	National Oceanographic Survey	1:19,700	3067
February 27, 1974	National Oceanographic Survey	1:24,000	2633A

U.S.G.S. Topographic Maps

Date	Location	Scale
1977	7 1/2-Minute Topographic Map Series New Bedford South, Massachusetts	1:25,000

Sanborn Map Company Fire Insurance Maps

Date	Location	Volume	Plate
1924	New Bedford, Massachusetts	1	68
1924-1950 revised	New Bedford, Massachusetts	1	68
1950-1975 revised	New Bedford, Massachusetts	1	68